IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of: Noriko SAKASHITA

Group Art Unit: 1713

Serial No.: 10/730,887

Examiner: Dr. Kelechi C. Egwim

Filed: December 10, 2003

Confirmation No.: 5155

PROCESSING AID FOR VINYL CHLORIDE RESIN AND VINYL

CHLORIDE RESIN COMPOSITION

Attorney Docket Number: 000466A

Customer Number: 38834

SUBMISSION OF APPEAL BRIEF

Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450

November 2, 2004

Sir:

Submitted herewith is an Appeal Brief in the above-identified U.S. patent application.

Attached please find a check in the amount of \$340.00 for the Appeal Brief fee.

If any additional fees are due in connection with this submission, please charge our Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPEAL BRIEF FOR APPELLANT

Ex parte Noriko SAKASHITA et al.

PROCESSING AID FOR VINYL CHLORIDE RESIN AND VINYL CHLORIDE RESIN COMPOSITION

Serial Number: 10/730,887

Filed: December 10, 2003

Examiner: Dr. Kelechi C. Egwim

Group Art Unit: 1713

Submitted by: Kenneth H. Salen Registration No. 43,077 Attorney for Appellant

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(I) REAL PARTY IN INTEREST

The real party in interest is KANEKA CORPORATION, by an assignment recorded in the U. S. Patent and Trademark Office on April 26, 2000, at Reel 010834, Frame 0683.

(II) RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to appellant, appellant's legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(III) STATUS OF CLAIMS

Independent claim 1 and dependent claims 2-4 are pending and rejected, and are appealed.

(VI) STATUS OF AMENDMENTS

This Appeal is filed following submission by Appellant of a Request for Continued Examination filed with a Preliminary Amendment on December 10, 2003. The Preliminary Amendment was entered but finally rejected in a First Action Final on June 3, 2004.

(V) SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 and dependent claims 2-4 are grouped and represented by the independently claimed subject matter of claim 1, which is characterized by:

A processing aid having a specific viscosity of η_{sp} of at least 0.5, the processing aid being obtained by polymerizing

1-50 parts of monomer mixture (B) and

99-50 parts of a latex copolymer having a specific viscosity of η_{sp} of at least 0.7.

The latex copolymer is previously obtained by polymerizing

99 to 50 parts by weight of a monomer mixture (A).

Monomer mixture (A) comprises

51 to 100% by weight of methyl methacrylate,

0 to 49 % by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith.

The invention is described in the specification in the following locations, as indicated by the Table on the following page:

	Specification
Claim	Locations
1. (Previously Presented) A processing aid for a vinyl chloride resin	Page 12, line 12
having specific viscosity η_{sp} of at least 0.5,	Page 12, line 16
which is obtained by polymerizing	
1 to 50 parts by weight of a monomer mixture (B) comprising	Page 9, line 25
0 to 49% by weight of methyl methacrylate,	Page 8, line 11
	Page 8, line 26
51 to 100% by weight of at least one monomer selected from	Page 7, line 8
the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and	Page 9, line 1
0 to 20 % by weight of a vinyl monomer copolymerizable therewith,	Page 8, line 17
in the presence of a latex of a (co)polymer having specific viscosity of	Page 8, line 3
at least η_{sp} 0.7, which is obtained by polymerizing in emulsion	
99 to 50 parts by weight of a monomer mixture (A) comprising	Page 9, line 23
	Page 10, line 2
51 to 100% by weight of methyl methacrylate,	Page 6, line 27
	Page 7, line 8
0 to 49 % by weight of at least one monomer selected from the	Page 7, line 2
group consisting of a methacrylate ester except methyl	Page 7, line 10
methacrylate and an acrylate ester, and	
0 to 20 % by weight of a vinyl monomer copolymerizable	Page 7, line 5
therewith,	Page 7, line 13
	Page 7, line 25
wherein the total amount of (A) and (B) is 100 parts by weight,	Page 9, line 27
and wherein specific viscosity is measured at 30°C using Ubbelohde's	Page 15, line 23
Viscometer on 0.1 g of polymer dissolved in 100 mL chloroform.	

(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-4 are rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Kishida et al. (JP 01215846), Tuzuki et al. (U.S. Patent No. 4,179,481), Matsuba et al. (U.S. Patent No. 5,093,420, EP392465 or GB 1378434).

(VII) ARGUMENT

Appellant respectfully disagrees with rejections under both §§102 and 103. Appellant notes that none of the cited references, alone or in proper combination, disclose each and every claimed limitation. Appellant submits that the rejection under 102 is not appropriate, and submits that the rejection of the present claims under 103 has been overcome by appropriate showing of unexpected results.

Appellants previously argued that the claimed ranges were not taught with specific specificity to constitute anticipation of the claims. The Examiner maintained that the specific specificity requirement did not apply because he argued that the ranges of the claimed invention and those of the cited references did not "overlap" as he understood the word. Appellant appeals the decision that the claimed ranges are taught with specific specificity to constitute anticipation of the claims.

The Examiner asserted that even if the ranges were not anticipated, they were obvious. Appellant produced evidence in the specification and in an Inventor's Declaration to show unexpected results associated with the presently claimed ranges. The Examiner discounted Appellant's show of unexpected results under the incorrect assertion that the evidence contradicted Appellant's claim of unexpected results.

Appellant appeals the decision that the proffered evidence of unexpected results is self-contradicting.

The Claimed Ranges Are Not Taught With Specific Specificity To Constitute Anticipation Of The Claims

Claims 1-4 are rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Kishida et al. (JP 01215846), Tuzuki et al. (U.S. Patent No. 4,179,481), Matsuba et al. (U.S. Patent No. 5,093,420, EP392465 or GB 1378434).

With respect to the rejection under §102, Appellant refers to MPEP §2131.03, which states that when the prior art:

- discloses a range that overlaps the claimed range, but
- no specific examples falling within the claimed range are disclosed, a case-by-case determination must be made as to anticipation. The MPEP then indicates that if
 - the claims are directed to a narrow range,
 - the reference teaches a broad range, and
 - there is evidence of unexpected results within the claimed narrow range,

depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute anticipation of the claims.

Because the prior art discloses a range that overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, Appellant submits that a case-by-case determination must be made as to anticipation.

In light of the limited specific viscosity teachings of the cited references, Appellant submits that the claimed range is not disclosed with sufficient specificity in the cited references.

Therefore, the cited references would not anticipate the claimed invention.

The Examiner Asserts that MPEP §2131.03 Does Not Apply Because The Ranges of the Prior Art Do Not "Overlap" the Ranges of the Claimed Invention

In the Office Action dated May 20, 2003, the Examiner asserted that the MPEP section on "sufficient specificity" does not apply in the present situation, and that the section only applied when the prior art discloses a range that overlaps, or is within the claimed range, and suggests that the present case is not in one of the listed groups because the claimed range is fully within the prior art range. However, Appellant notes that there is no proscription against a situation in which the claimed range is fully within the prior art range. The prior art indeed discloses a range that overlaps the claimed range, in all of the claimed range. Appellant resubmits a definition of the word "Overlap", from the American Heritage Dictionary of the English Language, Fourth Edition, which indicates that "overlap" means to "lie or extend over and cover part of", or "to have an area or range in common with". Appellant submits that the claimed ranges and the ranges of the cited references "overlap", according to the dictionary definition.

The Rejection under 103 is Rebutted Because Unexpected Results are Established in the Specification and in the Inventor's Declaration

The Examiner asserts that it would have been obvious to use each of the claimed specific viscosities, and asserts that Appellant has not rebutted the obviousness rejection because Appellant has not shown unexpected result compared with the cited references that teach viscosities greater than or equal to 0.24 or greater than or equal to 0.41, as the cited references individually do with respect to the requirement that the final viscosity of the prior art products.

Appellant notes that in the cited references, one or both of specific viscosities of first-step polymer and second-step polymer is/are lower than the claimed specific viscosities of the present invention. This statement has not been contradicted by the Examiner. Appellant has claimed that the present specification and the Inventor's Declaration combine to show that the product of the claimed invention is unexpectedly superior with respect to the properties of transparency, gelation and foamability than that which would have arguably been suggested by the cited references.

Appellant submits that the specification clearly shows the undesirable result of low specific viscosity outside the claimed range. Comparative Example 10 exhibits a first-stage polymer viscosity that is lower than that claimed, and all else being equal, this results in unexpectedly poorer gelation and foamability properties versus that of Examples 17-20, which have the claimed specific viscosities.

Furthermore, Appellant has presented an Inventor's Declaration dated March 6, 2003 that further illustrated that the processing aid of the present invention has properties unexpectedly superior than the cited references. As noted in the Declaration, the first-step polymer obtained in Comparative Example 9 of the present invention, the first-step polymer and the second-step polymer obtained in Comparative Example 10 and the first-step polymer obtained by EXPERIMENT in the Declaration have lower specific viscosity than the claimed specific viscosity of the present invention. It is shown that when these polymers are used as processing aids for poly (vinyl chloride), satisfactory transparency, gelation property and foamability are not obtained. Accordingly, it is shown that satisfactory transparency, gelation property and foamability can **not** be obtained when at least one of specific viscosity of the first-step polymer

and the second-step polymer is lower than the claimed specific viscosity of the present invention.

This result, in light of the teachings of the prior art, is unexpectedly superior.

Contrary to Examiner's Suggestions, the Disclosed Examples Meet All of the Claim

Limitations, and Unexpected Results are Not Destroyed by Some Comparative Examples

Meeting Less than All of the Claimed Limitations

The Examiner has asserted that the advantageous effects of the present invention have not

been sufficiently demonstrated. For proof, the Examiner cites evaluation results of Example 17

as being "excellent", in spite of the second-step polymer thereof "not being within the claimed

range"; and the Examiner cites evaluation results of Comparative Examples 1 to 8 as being poor,

in spite of the polymers thereof being "within the claimed range." Appellant respectfully submits

that the Examiner is incorrect about his assertions that Appellant's example 17 (second step) falls

outside the claimed range, and that comparative examples 1-8 fall within the claimed range.

Appellant notes that the specific viscosity of the second-step polymer of Example 17

fulfils a specific viscosity of at least 0.5, which is an element of Claim 1. Further, the Example

17 fulfills all of the other claim limitations. Therefore, Appellant submits that the Examiner's

assertion that "the second-step polymer of Example 17 is not within the claimed range" is

incorrect.

With respect to the Examiner's assertion that the Experimental Results failed to show

unexpected results, because Comparative Examples 1-8 fall "within the claimed ranges for

viscosity but exhibit poor properties", and therefore destroy a showing of unexpected results.

Page 10

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Appellant notes that these comparative examples do not include **all of the claimed limitations**; specifically, that monomer mixture (A) comprises 51 to 100% by weight of methyl methacrylate and monomer mixture B contains 51 to 100% by weight of an acrylate ester or methacrylate ester except methyl methacrylate. Appellant submits that all Comparative Examples 1-8 exhibit poor gelation, foamability or transparency. Appellant notes that in each of the cited Comparative Examples 1-8, *one* or *both* of the specific viscosities of first-step polymer and second-step polymer is/are **lower** than the claimed specific viscosities of the present invention. Appellant noted that the Examiner has not addressed Appellant's contentions with respect to the appropriateness of the Examiner's disregard for Appellant's evidence.

Summary

Appellant submits that the rejection of the present claims under 102 is not appropriate, and submits that the rejection of the present claims under 103 has been overcome by appropriate showing of unexpected results. Appellants respectfully solicit reversal of the rejections under 35 U.S.C. §§ 102 and 103.

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If this paper is not timely filed, Appellant hereby petitions for an appropriate extension of time. The fee for any such extension, and any other fees that are required with respect to this paper, may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

Kenneth H. Salen Registration No. 43,077

Telephone: (202) 822-1100 Facsimile: (202) 822-1111

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(VIII) <u>CLAIMS APPENDIX</u>

The claims on appeal are numbered 1 through 4 and read as follows:

1. (Previously Presented) A processing aid for a vinyl chloride resin having specific viscosity η_{sp} of at least 0.5, which is obtained by polymerizing

1 to 50 parts by weight of a monomer mixture (B) comprising 0 to 49% by weight of methyl methacrylate,

51 to 100% by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith,

in the presence of a latex of a (co)polymer having specific viscosity of at least η_{sp} 0.7, which is obtained by polymerizing in emulsion 99 to 50 parts by weight of a monomer mixture (A) comprising

51 to 100% by weight of methyl methacrylate,

0 to 49 % by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith, wherein the total amount of (A) and (B) is 100 parts by weight,

and wherein specific viscosity is measured at 30°C using Ubbelohde's Viscometer on 0.1 g of polymer dissolved in 100 mL chloroform.

2. (Original) The processing aid of Claim 1, wherein the processing aid for a vinyl chloride resin is a processing aid for a vinyl chloride resin containing a foaming agent.

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3. (Original) A vinyl chloride resin composition comprising 100 parts by weight of a vinyl chloride resin and 0.1 to 30 parts by weight of the processing aid of Claim 1.

4. (Original) A vinyl chloride resin composition containing a foaming agent comprising 100 parts by weight of a vinyl chloride resin, 0.1 to 30 parts by weight of the processing aid of Claim 1 and a foaming agent.

(IX) EVIDENCE APPENDIX

Evidence relied on and previously presented includes the following:

"Overlap", from American Heritage Dictionary of the English Language, Fourth Edition.

Inventor's Declaration under 37 C.F.R. §1.132, dated March 6, 2003.

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(X) RELATED PROCEEDINGS APPENDIX

Not applicable.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

SAKASHITA et al

Group Art Unit: 1713

Serial Number: 09/530,202

Examiner: Dr. Kelechi C. Egwim

Filed: April 26, 2000

For: PROCESSING AID FOR VINYL CHLORIDE RESIN AND VINYL

CHLORIDE RESIN COMPOSITION

DECLARATION UNDER 37 CFR 1.132

Honorable Commissioner

Washington, D.C. 20231

Sir,

Yasushi Nakanishi residing at 4-1-13, Takasago-cho Okihamamachi, Takasago City, Hyogo, JAPAN duly deposes and says:

- 1. That he graduated from Department of Macromolecular Science, Faculty of Science, Osaka University, Osaka, Japan, in the year 1990, and he received the degree of Master of Macromolecular Science from Osaka University, Osaka, Japan, in the year 1992;
- 2. That since 1992, he has been employed in the capacity of KANEKA CORPORATION;
- 3. That from 1992, he has been engaged in research and development for impact modifiers and processing aids of plastics;

- 4. That he has read and is familiar with the instant application for United States Letters Patent and Office Action thereto mailed November 14, 2002; and
- 5. That he has made experiments in order to prove that a polymer obtained by a process described in the cited reference have low specific viscosity (η_{sp}), and the obtained polymer does not sufficiently work as a processing aid for poly(vinyl chloride).

EXPERIMENT

Specific viscosity, transparency (all light transmittance and claud value), gelation property and foamability were estimated as mentioned below.

[Measurement of specific viscosity (η_{sp})]

Into 100ml of chloroform, 0.1g of a sample was dissolved and viscosity was measured by employing Ubbelohde's viscometer maintained at a constant temperature in 30°C water bath.

[Gelation property]

To 100 parts by weight of poly(vinyl chloride) (average molecular weight 680) were added 6.0 parts of a processing aid, 5.0 parts of calcium carbonate, 3.0 parts of titan oxide, 3.0 parts of dibasic lead phosphite, 0.4 part of lead stearate, 0.8 part of calcium stearate, 0.3 part of hydroxystearic acid (LOXIOL G-21 available from Henkel company), an aliphatic carboxylate ester (LOXIOL G-32 available from Henkel company), 0.4 part of dibasic ester of an aliphatic alcohol (LOXIOL G-60 available from

Henkel company) and 0.5 part of oxidized polyethylene wax (Hoechst-Wachs PED-521 available from Hoechst), and then they were mixed by means of a Henschel mixer. After the inner temperature was raised to 110° C, the mixture was cooled to obtain a powder compound.

Gelation property was evaluated by a slope of a straight line between a maximum torque and a minimum torque on kneading time vs. torque curve, which was obtained by kneading 62g of the obtained powder compound at 150°C by means of a small kneading machine (Plasticoder PLE-331 made by Brabender). It was judged that the gelation property was better in case of a bigger slope.

[Transparency]

To 100 parts of poly(vinyl chloride) (average molecular weight 680) were added 3.0 parts of a processing aid, 1.5 parts of an octyl tin mercaptide stabilizer, 1.5 parts of an epoxidized soybean oil, 1.0 part of butyl steatate and 0.5 part of a polyethylene glycol fatty acid ester, and then they were mixed by means of a Henschel mixer. After the inner temperature was raised to 110℃, the mixture was cooled to obtain a powder compound. The vinyl chloride resin composition was milled at 170℃ for five minutes by means of 8 inches test roll, then pressed at 180℃ for fifteen minutes to prepare a pressed plate having 3mm thickness. All light transmittance and cloud value of the obtained pressed plate were measured according to JIS-6714. It is indicated that the transparency is more excellent in case of the bigger all light transmittance. And it is also

indicated that the transparency is more excellent in case of the smaller cloud value.

[Foamability]

To the compound used in the evaluation of gelation property was added 1.0 part of azo dicarboxylamide to obtain a powder compound in the same manner as the above-mentioned method. And then the compound was extruded at 170°C by a small conical screw extruder (2D20C) attached to a labo plastmill (made by Toyoseiki company) in order to produce a foamed profile. Specific gravity of the obtained profile was measured. It is indicated that the expansion ratio is bigger and the formability is more excellent in case of the smaller specific gravity.

EXPERIMENT 1 (USP 5,093,420 Comparative Example 5)
(EP392465 page 5 line 52 to page 6 line 4)

This procedure is the same as that in Comparative Example 5 of USP 5,093,420.

A reactor equipped with a stirrer was charged with 200 parts of water, 1 part of dioctyl sodium sulfosuccinate and 0.01 part of potassium persulfate, and oxygen is removed from the space of the reactor and water by introducing nitrogen into the reactor. The mixture was raised to a temperature of 65°C with stirring, to which 80 parts of methyl methacrylate was added over 4 hours, and the polymerization reaction was continued for 1 hour with stirring while heating to substantially complete the polymerization reaction (first step). Then, to the reaction

mixture was added a monomer mixture of 11 parts of butyl acrylate and 9 parts of methyl methacrylate over 1 hour, and the temperature of the mixture was kept at 65°C for 1.5 hours, then the temperature was cooled down to 40°C (second step).

Concerning a polymer obtained by this procedure, specific viscosity was estimated by the above-mentioned method. Specific viscosity of the first-step polymer and the second-step polymer were 0.64 and 0.58, respectively.

Furthermore, the obtained polymer was added to poly(vinyl chloride) to obtain a poly(vinyl chloride) composition and the composition was estimated as to gelation property, transparency (all light transmittance and cloud value) and foamability by the above-mentioned methods. In result, all light transmittance was 53 %, cloud value was 22 %, gelation property was 4.5 Nm/min. and formability was 0.70 g/cm³.

CONCLUSION

The second-step polymer obtained by the procedure described in USP 5,093,420 has specific viscosity of above 0.5, but specific viscosity of the first-step polymer is less than 0.7.

Furthermore, as is clear from results, a poly(vinyl chloride) composition obtained by adding the polymer as a processing aid to poly(vinyl chloride) does not have satisfactory gelation property, transparency and foamability.

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

> This 6th day of March, 2003

Yasushi Nakanishi

We, the undersigned witnesses, hereby acknowledge that Yasushi Nakanishi is personally known to us and did execute the foregoing Declaration in our presence on:

Date: March 6, 2003

Witness Hiroshi Fore

Date: March 6, 2003



overlap

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5 entries found for overlap.

Pronunciation Key (Ver-lap) v. o·ver·lapped, o·ver·lap·ping, o·ver·laps v. tr.

- 1. To lie or extend over and cover part of.
- 2. To have an area or range in common with.

v. intr.

- 1. To lie over and partly cover something.
- 2. To correspond in character or function: Their duties overlap.
- 3. Mathematics. To have one or more elements in common. Used of sets.

 $n. (\bar{\circ}' v_{r-1} \bar{a}_{p}')$

- 1. A part or portion that overlaps or is overlapped.
- 2. An instance of overlapping.

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